

Southern Southeast Inside (Clarence Strait and Dixon Entrance)  
Relative Abundance Sablefish Long Line Survey Report  
For 2003



by  
Deidra Holum

REGIONAL INFORMATION REPORT<sup>1</sup> NO. 1J04-09

Alaska Department of Fish and Game  
Division of Commercial Fisheries  
Juneau, Alaska

February 2004

---

<sup>1</sup> The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Commercial Fisheries Management and Development Division.

## **AUTHOR**

Deidra Holum is the SSEI sablefish research coordinator for the Alaska Department of Fish and Game, Groundfish Project, Region I, Southeast Alaska. She can be reached by mail at P.O. Box 240020, Douglas, Alaska 99824 or by email at [deidra\\_holum@fishgame.state.ak.us](mailto:deidra_holum@fishgame.state.ak.us).

## **ACKNOWLEDGEMENTS**

Thank you to the skippers, Rob Swanson and Brian Kandoll, and crews of the F/V Jennifer Lee and the F/V Providence for once again demonstrating a high degree of professional competence and hard work on the survey. The ADF&G staff, which included Kamala Carroll, Eric Coonradt and Brooke Ratzat, is also deserving of accolades. The dedicated efforts of these two groups made the 2003 survey both a success and a pleasure.

Cover photo: F/V Providence and F/V Jennifer Lee offloading in Ketchikan, 1998; photo by Beverly Richardson, ADF&G.

## TABLE OF CONTENTS

AUTHOR.....	ii
ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES.....	iv
LIST OF FIGURES.....	v
INTRODUCTION.....	1
PRIMARY OBJECTIVES.....	1
SECONDARY OBJECTIVES.....	1
OPERATIONS.....	1
BIOLOGICAL SAMPLING.....	3
RESULTS.....	4
SURVEY VESSEL AND SCIENTIFIC PERSONNEL.....	6
LITERATURE CITED.....	7

## LIST OF TABLES

<b><u>Table</u></b>	<b><u>Page</u></b>
Table 1. Set and Catch information for the 37 stations fished in 2003 SSEI sablefish longline survey. ....	8
Table 2. Longline gear configuration for 2003 SSEI. ....	9
Table 3. 2003 SSEI sablefish survey catch by species and station. ....	10
Table 4. SSEI Sablefish CPUE's for survey stations fished 1999 - 2003. ....	11

## LIST OF FIGURES

<b><u>Figure</u></b>	<b><u>Page</u></b>
Figure 1. Survey station locations (circles numbered 2-57) and groundfish statistical areas (six digits).....	12

## INTRODUCTION

The Alaska Department of Fish and Game (ADF&G) conducts an annual longline survey in the Southern Southeast Inside (SSEI) subdistrict of Southeast Alaska to assess the health of the sablefish stocks targeted in the limited-entry state fishery. The 2003 survey, which occurred between May 19 and May 26, represents the sixteenth year of these operations.

## PRIMARY OBJECTIVES

1. To estimate the relative abundance of sablefish in the SSEI subdistrict (Clarence Strait and Dixon Entrance).
2. To collect 403-415 biological samples including otoliths, length, weight, sex and stage of gonad maturity from a subsample of sablefish caught.
3. To collect biological samples including otoliths, length, weight, sex and stage of gonad maturity from all rockfish (*Sebastes*) caught.
4. To collect length data only from all thornyhead rockfish (*Sebastolobus*) caught and released at sea.

## SECONDARY OBJECTIVES

1. To collect seabird abundance data at each survey station for the Washington Sea Grant Program.
2. To collect heart tissue samples from 50 rougheye rockfish caught in the northernmost stations, for the University of Alaska, Juneau Center, School of Fisheries and Oceans Science.

## OPERATIONS

The survey area included the waters of Clarence Strait and Dixon Entrance from 55° 39.49' N. latitude and 132° 19.17' W. longitude to 54° 28.01' N. latitude and 132° 31.93' W. longitude (Figure 1). These coordinates describe the area of Clarence Strait and Dixon Entrance from the northernmost station (Station 50) near Tolstoi Point to the southernmost station (Station 53) near the Canadian border. The most westerly station (Station 52) sampled lies just east of Cape Muzon at 54° 31.51' N. latitude and 132° 40.98' W. longitude.

The *F/V Jennifer Lee* (Trip #1) and the *F/V Providence* (Trip # 2), accepted the fourth year of a five year renewable contract to conduct the annual SSEI sablefish longline survey. The two

contractors simultaneously fished the 37 stations with the *F/V Jennifer Lee* fishing 19 stations in northern Clarence Strait and the *F/V Providence* fishing 18 stations in southern Clarence Strait and Dixon Entrance (Figure 1).

A “set” was defined as the deployment and retrieval of 25 skates of baited longline gear. Skates were laid out in a single string connected to an anchor with buoy lines and flags on both ends of the string. Standard gear included #13/0 Mustad circle hooks on medium lay #60 gangions spaced 2 m apart and baited with (100-200g) *Illex* spp. squid (Table 2). A single tori line (seabird avoidance device) was deployed at the beginning of each set.

Both survey vessels set the required amount of gear at all stations except Station 30 where, due to a miscount only 24 skates of gear were set rather than the requisite 25. In 2002, an on grounds decision was made to set Station 10 as a single station using the most northern coordinates possible in order to minimize CPUE impact at nearby Station 5. The gear utilized in 2002 amounted to 31 skates of already baited gear, which while more than a single station remained considerably less than a double station. The coordinates chosen closely approximated those of the original station 11.

Station 10 and Station 11 were set as separate stations through the 1996 survey. At that time only 500 hooks were set per station. From 1997 through 2001, Station 10 was set as a double station, using 50 skates of gear (2250 hooks), and using the Start coordinate from Station 10 and the End coordinate from Station 11. In 2002, 31 skates (1395 hooks) were set using the Start coordinate of the original Station 11 and passing through the End coordinate on the way to dropping the second anchor. In 2003, this station was set with a standard amount of gear, 25 skates (1125 hooks), again using the Start coordinate of the original Station 11 and passing through the End coordinate on the way to setting the second anchor. The Start and End coordinates established in 2003 will henceforth be used as the coordinates for setting Station 11 on all future surveys. While the 2002 report continued to identify this set as Station 10, in 2003 it reverted to the more appropriate designation of Station 11. The 2003 results are recorded as, and attributed to, Station 11. (Table 1 and Figure 1). These changes in both effort and designated station number should be kept in mind when comparing historical data from these sites.

The survey was conducted during a time period when the tidal differentials were minimal. With the exception of Station 56, all sets were accomplished within a specified time frame of 3-11 hours, intended to minimize the chance of “gear saturation” (Sigler, 1993). At Station 56, the 25 skates of gear were retrieved after a soak time of only 2.7 hours. The slightly early haul-back occurred when the order of retrieval of Stations 55 and 56 was inadvertently reversed.

On both vessels, only the squid body was used for bait. This is consistent with NMFS sablefish surveys in federal waters and has been the technique used in the SSEI longline surveys since 2001. Each squid was cut into 3 - 4 pieces, resulting in approximately 12.5 lbs. of bait being used per 100 hooks.

A total of 37 stations were surveyed. One set was made at each station. Sets were made in the same direction as the tidal current using the Start and End coordinates from a master list of survey stations. A typical pattern was to deploy two sets, wait three hours, pick the first set,

deploy the third set (and sometimes a fourth set) and then retrieve the second. This alternating pattern of setting and hauling typically allowed soak times to remain within the established 3-11 hour parameter. Haul-back direction depended upon the tide, wind direction and current. When setting gear, the skipper recorded latitude, longitude, start and end depths, start time, compass bearing, wind direction and speed, and bottom type at each station. Depths were usually recorded at the deployment of every two skates, as well as when the first and last anchors were thrown overboard. These depths were averaged to obtain a mean depth per station. Beginning in 2003, the skipper also recorded retrieval information for the gear, marking down the coordinates at the first buoy on board and second anchor on board at each station.

At each station, catch and effort (number of hooks) data were tallied as the gear was hauled. During retrieval, the species of each fish brought to the surface was recorded, as was the condition of each fishless hook (i.e., baited, unbaited, or invalid). Each skate was treated as a subsection of a set to allow exclusion of invalid subsections for estimating catch per unit effort (CPUE). Bycatch was identified by species when possible. This included all rockfish landed, as well as spiny dogfish, arrowtooth flounder, Pacific cod, walleye pollock, ratfish and Dover sole. Other flatfish, thornyheads, sharks and hagfish were not keyed to species, while skates were identified as either longnose skate or “other” skate. Immediately after the second anchor was brought on board at the end of a haul, seabird abundance was estimated within a 50-meter radius off the stern of each vessel. Seabirds were also identified by species when possible.

## **BIOLOGICAL SAMPLING**

Prior to the start of the survey a decision was made to sample all stations at the rate of the first 15 skates of each set hauled. This rate was chosen to insure the obtainment of sufficient biological samples to meet the survey requirements. Beginning with the first sablefish brought on board at each station, every 10<sup>th</sup> sablefish was sampled for length (nearest cm), weight (nearest 0.1 kg), sex, and stage of gonad maturity. Stage of sexual maturity was coded according to a list of six descriptions of gonad conditions for each sex. Otoliths were extracted and paired with the biological data and eventually forwarded to ADF&G’s Coded Wire Tag and Otolith Processing Laboratory in Juneau for age analysis. Length (nearest 0.5 cm), weight (nearest 0.1 kg), sex, stage of maturity, and otoliths were collected from all rockfish landed except thornyheads. Thornyheads were measured for length (nearest 0.5 cm) and then released live. Other bycatch species were identified and released at the rail.



## RESULTS

Set information and CPUE were collected from all 37 stations. Of the 924 skates set for the survey, 903 skates were considered valid during haul-back as defined by standard operating procedures. These 903 skates were used to calculate CPUE (fish/hk).

The average mean depth fished during the survey was 239 fm, [range: 188 fm (Station 56) to 355 fm (Station 50)]. Soak time ranged from 2.7 hours (Station 56) to 7.7 hours (Station 3) with an average time of 4.4 hours.

In 2003, a total of 9,681 sablefish were caught on 39,967 valid hooks (Table 1). The overall CPUE (fish/hook) was 0.24 sablefish per hook [range: 0.09 fish/hook (Station 17) to 0.46 fish/hook (Station 20)]. This catch rate closely conformed to the 0.21 sablefish per hook mean and 0.22 sablefish per hook median and mode established by the previous four surveys. The 2003 overall average weight of 2.07 kg for sablefish also closely approximated the average mean weight of 1.99 kg recorded by these earlier surveys (Table 4). The average mean CPUE by weight was 0.49 kg/hook, [range: 0.17 kg/hook (Station 33) to 1.00 kg/hook (Station 48)] for all stations in 2003 (Table 1).

A total of 520 sablefish biological samples were collected from 37 stations during the 2003 survey. Overall mean length was 57.6 cm (range: 44.4 cm to 92.0 cm) for all subsets sampled (biological samples were collected from both valid and invalid subsets). Sampled sablefish from the 2002 survey had an overall mean length of 56.8 cm (range 40.0 cm to 85.0 cm). Due to poor weather conditions during the 2003 survey only 417 sablefish weight samples were collected from 35 stations. The average mean weight was 2.11 kg (range: 0.8 kg to 8.0 kg). During the 2002 survey, weight samples were collected at all stations. The average mean weight was 1.87 kg (range: 0.6 kg to 6.3 kg) for those samples. Biological samples collected from other species during the 2003 survey included 1 harlequin rockfish, 6 redbanded rockfish, 39 rougheye rockfish, and 47 shortraker rockfish. Length data were collected from 316 thornyhead rockfish.

Bycatch species on the 903 valid subsets included 438 halibut, 480 thornyhead rockfish, 44 shortraker rockfish, 39 rougheye rockfish, 15 redbanded rockfish, 1,294 spiny dogfish, 545 skates, and 172 arrowtooth flounder (Table 3). There were 6 Pacific Sleeper shark, 3 Dover sole, 124 Pacific cod, 10 coral and 225 “other” species also caught on valid subsets. “Other” species included hake, ratfish, and hagfish.

Seabird identification and count: although tori lines (bird avoidance devices) were deployed at the beginning of each set, the relatively low numbers of seabirds present at any of the survey stations made assessment of efficacy questionable. The Washington Sea Grant Program will tabulate seabird counts from this survey. For more information regarding seabird avoidance devices and seabird abundance counts, contact Ed Melvin, Marine Fisheries Specialist, 206-543-9968.

Rougheye rockfish heart tissue samples: the University of Alaska, Juneau Center, Fisheries and Oceans Science had requested heart tissue samples from 50 rougheye rockfish caught in the

northernmost stations of the survey. Sporadic catches of rougheye rockfish, coupled with inclement weather conditions, did not allow the 2003 survey to accomplish this secondary objective.

## SURVEY VESSEL AND SCIENTIFIC PERSONNEL

<i>F/V Jennifer Lee</i>	<i>F/V Providence</i>
<p>Skipper: Rob Swanson</p> <p>Crew: Matt Bryner</p> <p>Crew: Chris Ponts</p> <p>Crew: Adam Swanson</p> <p>ADF&amp;G: Deidra Holum</p> <p>ADF&amp;G: Brooke Ratzat</p>	<p>Skipper: Brian Kandoll</p> <p>Crew: Jim Edgars</p> <p>Crew: Matte Kandoll</p> <p>Crew: Scot Kandoll</p> <p>ADF&amp;G: Kamala Carroll</p> <p>ADF&amp;G: Eric Coonradt</p>

## LITERATURE CITED

Sigler, M.F. 1993. Stock Assessment and management of sablefish *Anoplopoma fimbria* in the Gulf of Alaska. Doctoral dissertation. University of Washington. 188pp.

Table 1. Set and Catch information for the 37 stations fished in 2003 SSEI sablefish longline survey. \*

AREA DESCRIPTION	STATION	STATISTICAL AREA	START	LATITUDE	START	LONGITUDE	END	LATITUDE	END	LONGITUDE	Soak Time (Hours)	HAUL BACK	Mean Depth (fm)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	Mean Weight (kg)	CPUE (kg/hk)
Cape Chacon	2	315432	54	39.70	131	54.29	54	41.14	131	54.16	3.3	Opposite	199	287	1002	0.29	2.45	0.70
W. Devil Rock	3	315432	54	44.83	131	43.81	54	43.22	131	43.97	7.7	Opposite	211	394	1139	0.35	****	****
W. Devil Rock	4	315432	54	41.85	131	44.09	54	43.33	131	43.95	3.4	Opposite	210	392	1124	0.35	1.65	0.57
West Rock	5	315432	54	46.31	131	42.80	54	47.84	131	42.79	5.0	Same	225	347	1059	0.33	****	****
McLean Point	6	315432	54	46.52	131	50.69	54	47.96	131	50.62	4.5	Opposite	216	350	1040	0.34	1.51	0.51
West Rock	11**	315432	54	48.39	131	41.77	54	49.93	131	41.78	3.2	Same	260	359	1116	0.32	1.75	0.56
Island Point	12	315432	54	48.75	131	53.06	54	50.29	131	52.79	4.2	Opposite	221	219	1129	0.19	1.84	0.36
Hassler Reef	14	315432	54	50.40	131	42.69	54	52.04	131	42.57	3.2	Opposite	232	523	1128	0.46	1.44	0.67
Kendrick Island	15	315432	54	51.00	131	56.45	54	52.50	131	56.52	4.2	Opposite	235	136	1071	0.13	2.10	0.27
Kendrick Island	16	315432	54	53.37	131	55.86	54	54.96	131	55.65	6.4	Opposite	232	158	1120	0.14	2.08	0.29
Hidden Bay	17	315432	54	54.10	131	51.30	54	55.43	131	51.54	3.9	Opposite	227	94	1101	0.09	2.08	0.18
Hidden Bay	18	315432	54	54.31	131	48.20	54	55.73	131	48.15	3.1	Same	228	183	1040	0.18	1.93	0.34
Point Davidson	20	315502	54	59.34	131	42.81	55	00.97	131	43.44	4.0	Opposite	218	518	1117	0.46	1.53	0.71
Rip Point	21	315502	55	02.83	131	49.16	55	04.40	131	49.51	5.9	Opposite	228	176	1111	0.16	2.40	0.38
Wedge Island	26	315502	55	09.60	131	54.72	55	11.20	131	53.97	7.0	Opposite	230	174	1114	0.16	2.49	0.39
Wedge Island	27	315502	55	13.91	131	56.24	55	15.45	131	55.71	3.1	Opposite	196	188	999	0.19	1.78	0.33
Chasina Point	30	315502	55	17.55	131	56.06	55	19.10	131	55.73	4.7	Opposite	235	107	1061	0.10	2.67	0.27
Skin Island	31	315502	55	18.46	131	58.69	55	19.80	131	59.97	6.5	Same	237	120	1076	0.11	2.14	0.24
Grant Cove	33	315502	55	20.71	131	58.88	55	22.44	131	59.01	3.3	Opposite	218	132	1126	0.12	1.42	0.17
Vallenar Point	35	315502	55	26.02	131	59.26	55	24.55	131	58.97	5.9	Same	250	202	1026	0.20	2.36	0.46
Vallenar Point	36	315502	55	25.37	131	57.09	55	24.04	131	56.04	3.3	Same	255	319	1102	0.29	2.40	0.69
Caamano Island	37	315502	55	28.41	131	59.03	55	29.18	131	01.46	4.2	Opposite	240	262	1101	0.24	2.72	0.65
Street Island	39	325531	55	30.10	132	08.76	55	31.68	132	08.68	3.5	Opposite	273	260	1112	0.23	2.74	0.64
Niblack Point	41	325531	55	32.15	132	06.94	55	32.88	132	09.20	5.4	Same	230	231	1053	0.22	2.27	0.50
Niblack Point	43	325531	55	32.65	132	10.44	55	31.20	132	09.63	3.2	Same	215	200	1086	0.18	2.22	0.41
Ship Island	44	325531	55	34.10	132	13.56	55	35.28	132	14.89	3.8	Opposite	280	301	968	0.31	2.05	0.64
Ship Island	46	325531	55	36.44	132	16.51	55	35.13	132	15.22	3.4	Same	320	163	1082	0.15	2.14	0.32
Windfall Harbor	47	325531	55	34.71	132	18.65	55	36.15	132	17.73	3.2	Opposite	255	205	1054	0.19	2.18	0.42
Ship Island	48	325531	55	36.06	132	14.36	55	37.37	132	15.58	5.4	Same	340	404	975	0.41	2.43	1.00
Windfall Harbor	49	325531	55	37.56	132	16.50	55	39.05	132	17.07	3.8	Opposite	342	142	1127	0.13	2.42	0.31
Tolstoi Point	50	325531	55	37.95	132	18.72	55	39.49	132	19.17	3.3	Same	355	143	1104	0.13	2.73	0.35
Cape Muzon	52	325431	54	31.50	132	37.87	54	31.51	132	40.98	7.1	Opposite	200	251	1057	0.24	2.55	0.60
Cape Muzon	53	325401	54	28.02	132	34.99	54	28.01	132	31.93	4.4	Opposite	204	338	1143	0.30	2.42	0.72
Cape Muzon	54	325401	54	28.41	132	21.94	54	28.40	132	24.85	4.0	Opposite	197	434	1136	0.38	2.40	0.92
Celestial Reef	55	315431	54	28.94	131	48.98	54	30.43	131	48.97	7.2	Opposite	195	341	985	0.35	1.58	0.55
Celestial Reef	56***	315431	54	30.53	131	48.03	54	31.96	131	47.96	2.7	Same	188	277	1051	0.26	1.52	0.40
W.Devil Rock	57	315431	54	37.68	131	41.60	54	39.18	131	41.26	4.5	Same	230	351	1132	0.31	1.57	0.49
Average											4.4		239	262	1080	0.24	2.11	0.49
Maximum											7.7		355	523	1143	0.46	2.74	1.00
Minimum											2.7		188	94	968	0.09	1.42	0.17
Total														9681	39967			

\*Invalid subsets were excluded in calculating Station information for #Sablefish, #Valid Hooks, and CPUE's.

\*\* Station 11 was formerly Station 10 and set as a double station. In 2003 it was set as a single station with a standard 25 skates of gear. (See Results).

\*\*\*The retrieval of gear at Station 56 was 20 minutes earlier than the minimum of 3 hours as skipper meant to haul Station 55 first.

\*\*\*\* Rough seas prevented collection of sample weights at these stations.

Table 2. Longline gear configuration for 2003 SSEI.

Line type	American Line SSR 100, soft med. lay, 3/8".	
Anchor weight (lbs)	40 – 60	
Skate Length (fm)	55	
Becket (cm)	46, med lay #72	
Gangion (cm)	38, med lay #60	
Hook spacing (m)	2	
Hooks per skate	45	
Running line (fm)	150	
Lead weights (lbs)	7	

Table 3. 2003 SSEI sablefish survey catch by species and station. \*

STATION	SABLEFISH	HALIBUT	IDIOT	SHORTRAKER	ROUGHEYE	REDBANDED	DOGFISH	SKATE	ARROWTOOTH	OTHER	SLEEPER SHARK	CORAL	DOVER SOLE	PACIFIC COD
2	287	16	14	0	0	0	114	18	7	2	0	0	0	0
3	394	12	7	0	0	0	77	20	4	1	0	0	0	0
4	392	6	5	0	0	0	61	21	7	0	0	0	0	0
5	347	6	4	0	0	0	22	5	3	1	0	0	1	0
6	350	5	17	0	0	0	17	16	0	1	0	0	0	0
10	359	5	2	4	0	0	81	11	1	0	1	0	0	0
12	219	0	24	0	0	0	22	17	0	4	1	0	0	0
14	523	11	7	0	0	0	18	14	8	0	0	0	0	0
15	136	0	8	0	1	0	24	17	1	2	0	0	0	0
16	158	3	7	0	0	0	14	14	1	0	0	0	0	0
17	94	1	28	1	0	0	21	16	2	1	0	0	0	0
18	183	0	17	0	0	0	57	27	1	0	0	0	0	0
20	518	1	3	0	0	0	28	7	1	6	0	0	0	0
21	176	4	12	0	0	0	24	6	1	12	0	0	0	0
26	174	34	18	0	5	8	76	22	3	29	0	0	0	49
27	188	7	14	0	0	0	163	3	2	9	0	0	0	6
30	107	2	14	1	0	0	12	9	0	3	0	0	0	0
31	120	2	4	0	0	0	6	7	0	18	0	0	0	0
33	132	0	8	0	0	0	6	9	2	11	0	0	0	0
35	202	3	6	0	0	0	20	7	0	15	0	0	0	0
36	319	25	4	2	0	0	29	13	2	3	0	1	0	0
37	262	14	19	0	1	0	11	6	1	5	1	0	0	0
39	260	11	11	4	0	0	7	12	3	7	0	0	0	0
41	231	12	4	2	3	2	38	15	3	10	2	1	0	0
43	200	49	13	5	6	1	30	13	11	29	0	1	1	17
44	301	21	8	0	0	0	8	11	2	3	0	2	0	0
46	163	1	2	2	0	0	2	4	0	12	0	0	0	0
47	205	11	7	1	0	0	1	8	1	4	0	1	0	0
48	404	5	4	0	0	0	4	13	0	7	1	0	0	0
49	142	2	6	1	0	0	1	3	0	7	0	0	0	0
50	143	0	3	0	0	0	2	5	1	13	0	0	0	0
52	251	42	75	4	10	3	37	52	14	3	0	1	0	25
53	338	57	40	11	7	0	7	48	47	1	0	1	0	7
54	434	56	34	5	6	1	31	45	28	5	0	2	1	14
55	341	7	25	0	0	0	70	14	4	0	0	0	0	2
56	277	3	4	0	0	0	60	8	6	0	0	0	0	4
57	351	4	2	1	0	0	93	9	5	1	0	0	0	0
Grand Total	9681	438	480	44	39	15	1294	545	172	225	6	10	3	124

\* Invalid subsets were excluded.

Table 4. SSEI Sablefish CPUE's for survey stations fished 1999 - 2003.\*

Sablefish Mean Weight (KG) by station						CPUE's for SSEI Longline Survey Stations																			
	2003	2002	2001	2000	1999	2003				2002				2001				2000				1999			
STATION	Mean Wt.KG	Mean Wt.KG	Mean Wt.KG	Mean Wt.KG	Mean Wt.KG	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)	Sablefish Total	Valid Hooks	CPUE (fish/hk)	CPUE (kg/hook)
2	2.45	1.70	2.03	2.57	3.17	287	1002	0.29	0.70	500	1138	0.44	0.75	162	1043	0.16	0.32	296	1146	0.26	0.66	430	1066	0.40	1.28
3	***	1.64	1.15	1.33	1.16	394	1139	0.35	***	229	1079	0.21	0.35	222	1075	0.21	0.24	255	1133	0.23	0.30	293	782	0.37	0.43
4	1.65	1.62	1.58	1.38	1.21	392	1124	0.35	0.57	216	944	0.23	0.37	196	1110	0.18	0.28	172	1123	0.15	0.21	163	807	0.20	0.24
5	***	1.61	***	1.49	1.46	347	1059	0.33	***	238	1128	0.21	0.34	166	1075	0.15	***	220	1074	0.20	0.31	172	1055	0.16	0.24
6	1.51	1.85	1.55	2.29	1.69	350	1040	0.34	0.51	241	1036	0.23	0.43	177	1117	0.16	0.25	296	1138	0.26	0.59	247	793	0.31	0.53
11**	1.75	2.00	1.89	2.22	1.84	359	1116	0.32	0.56	434	1400	0.31	0.62	493	2127	0.23	0.44	291	2032	0.14	0.32	590	2160	0.27	0.50
12	1.84	2.21	1.98	1.78	1.89	219	1129	0.19	0.36	146	1123	0.13	0.29	116	1085	0.11	0.21	291	1132	0.26	0.46	185	751	0.25	0.47
14	1.44	1.96	1.38	1.39	1.64	523	1128	0.46	0.67	387	1130	0.34	0.67	247	1141	0.22	0.30	304	1133	0.27	0.37	368	1064	0.35	0.57
15	2.10	1.99	***	1.85	1.50	136	1071	0.13	0.27	118	1127	0.10	0.21	26	1107	0.02	***	113	1114	0.10	0.19	73	1077	0.07	0.10
16	2.08	1.30	2.07	2.22	2.39	158	1120	0.14	0.29	54	1121	0.05	0.06	43	1115	0.04	0.08	109	1121	0.10	0.22	118	1029	0.11	0.27
17	2.08	1.33	***	1.73	1.31	94	1101	0.09	0.18	124	1130	0.11	0.15	62	1077	0.06	***	150	1116	0.13	0.23	120	1065	0.11	0.15
18	1.93	1.56	***	1.75	1.64	183	1040	0.18	0.34	223	1122	0.20	0.31	80	1097	0.07	***	222	1094	0.20	0.36	138	1054	0.13	0.22
20	1.53	1.62	1.83	1.43	1.54	518	1117	0.46	0.71	213	1126	0.19	0.31	182	1120	0.16	0.30	129	1117	0.12	0.16	234	1070	0.22	0.34
21	2.40	1.76	1.55	1.36	1.37	176	1111	0.16	0.38	142	1117	0.13	0.22	116	1119	0.10	0.16	125	1119	0.11	0.15	123	1047	0.12	0.16
26	2.49	2.28	3.09	1.98	1.82	174	1114	0.16	0.39	47	1124	0.04	0.10	125	1048	0.12	0.37	175	1111	0.16	0.31	147	1084	0.14	0.25
27	1.78	2.36	2.01	2.65	1.39	188	999	0.19	0.33	101	1123	0.09	0.21	227	967	0.23	0.47	264	1103	0.24	0.64	162	1050	0.15	0.21
30	2.67	2.19	2.26	2.28	1.97	107	1061	0.10	0.27	142	1115	0.13	0.28	107	1030	0.10	0.24	106	1110	0.10	0.22	111	1076	0.10	0.20
31	2.14	1.55	2.08	1.44	1.61	120	1076	0.11	0.24	41	1109	0.04	0.06	64	1120	0.06	0.12	106	1115	0.10	0.14	106	1059	0.10	0.16
33	1.42	1.85	1.50	1.34	1.18	132	1126	0.12	0.17	213	1113	0.19	0.35	50	1117	0.04	0.07	182	1116	0.16	0.22	72	1093	0.07	0.08
35	2.36	1.88	***	2.03	2.24	202	1026	0.20	0.46	158	1115	0.14	0.27	120	1114	0.11	***	122	1098	0.11	0.23	123	1079	0.11	0.26
36	2.40	2.24	2.76	1.80	2.26	319	1102	0.29	0.69	211	1088	0.19	0.43	191	1105	0.17	0.48	292	1053	0.28	0.50	305	1087	0.28	0.63
37	2.72	1.95	***	2.15	2.39	262	1101	0.24	0.65	267	1117	0.24	0.47	97	923	0.11	***	227	892	0.25	0.55	201	979	0.21	0.49
39	2.74	2.56	2.44	2.36	1.90	260	1112	0.23	0.64	187	1112	0.17	0.43	139	1109	0.13	0.31	216	1108	0.19	0.46	274	1042	0.26	0.50
41	2.27	2.32	2.65	2.31	2.30	231	1053	0.22	0.50	263	1054	0.25	0.58	249	1098	0.23	0.60	253	1098	0.23	0.53	96	298	0.32	0.74
43	2.22	2.14	2.24	***	2.15	200	1086	0.18	0.41	221	1009	0.22	0.47	198	1105	0.18	0.40	311	966	0.32	***	182	784	0.23	0.50
44	2.05	1.71	1.75	1.71	2.06	301	968	0.31	0.64	347	1111	0.31	0.53	316	1102	0.29	0.50	429	975	0.44	0.75	435	1070	0.41	0.84
46	2.14	1.94	2.30	1.85	1.74	163	1082	0.15	0.32	258	1104	0.23	0.45	207	1096	0.19	0.43	275	1103	0.25	0.46	119	692	0.17	0.30
47	2.18	1.65	1.82	1.88	1.70	205	1054	0.19	0.42	187	1016	0.18	0.30	184	1029	0.18	0.32	326	1101	0.30	0.56	313	891	0.35	0.60
48	2.43	2.49	3.00	2.37	2.40	404	975	0.41	1.00	363	1025	0.35	0.88	330	997	0.33	0.99	380	1108	0.34	0.81	200	1079	0.19	0.44
49	2.42	2.06	2.21	2.86	1.98	142	1127	0.13	0.31	203	1108	0.18	0.38	213	1090	0.20	0.43	159	896	0.18	0.51	176	1076	0.16	0.32
50	2.73	2.18	2.39	1.93	2.04	143	1104	0.13	0.35	178	1043	0.17	0.37	162	1113	0.15	0.35	266	1016	0.26	0.50	171	1088	0.16	0.32
52	2.55	2.11	3.13	3.03	2.75	251	1057	0.24	0.60	254	1066	0.24	0.50	291	1116	0.26	0.82	317	1124	0.28	0.85	254	1080	0.24	0.65
53	2.42	1.91	1.98	2.44	2.65	338	1143	0.30	0.72	399	1128	0.35	0.68	233	1127	0.21	0.41	329	1037	0.32	0.78	222	1029	0.22	0.57
54	2.40	2.17	2.60	2.54	2.90	434	1136	0.38	0.92	472	1085	0.44	0.94	346	1126	0.31	0.80	397	1116	0.36	0.90	268	1077	0.25	0.72
55	1.58	1.44	***	1.97	1.21	341	985	0.35	0.55	552	1122	0.49	0.71	107	1094	0.10	***	278	1137	0.24	0.48	532	1058	0.50	0.61
56	1.52	1.17	***	1.34	1.09	277	1051	0.26	0.40	389	1120	0.35	0.40	110	1143	0.10	***	266	1128	0.24	0.32	387	1032	0.38	0.41
57	1.57	1.80	***	1.83	1.58	351	1132	0.31	0.49	221	1125	0.20	0.35	316	1114	0.28	***	141	1073	0.13	0.24	217	1089	0.20	0.32
Averages	2.07	1.87	2.17	2.02	1.88			0.24	0.49			0.22	0.41			0.16	0.38			0.22	0.43			0.22	0.42
Overall Average (red numbers only) = Total Individual Weights (kg)/Total Individual Samples collected at Sea.																									

\* Invalid subsets were excluded in CPUE calculations.

\*\*Formerly called Station 10 and set as a DOUBLE station (10 &amp; 11), it was changed in 2002 to a standard station using the 1996 Starting Coordinates of the original Station 11. Name change occurred in 2003.

\*\* Weights not collected at these stations due to weather.



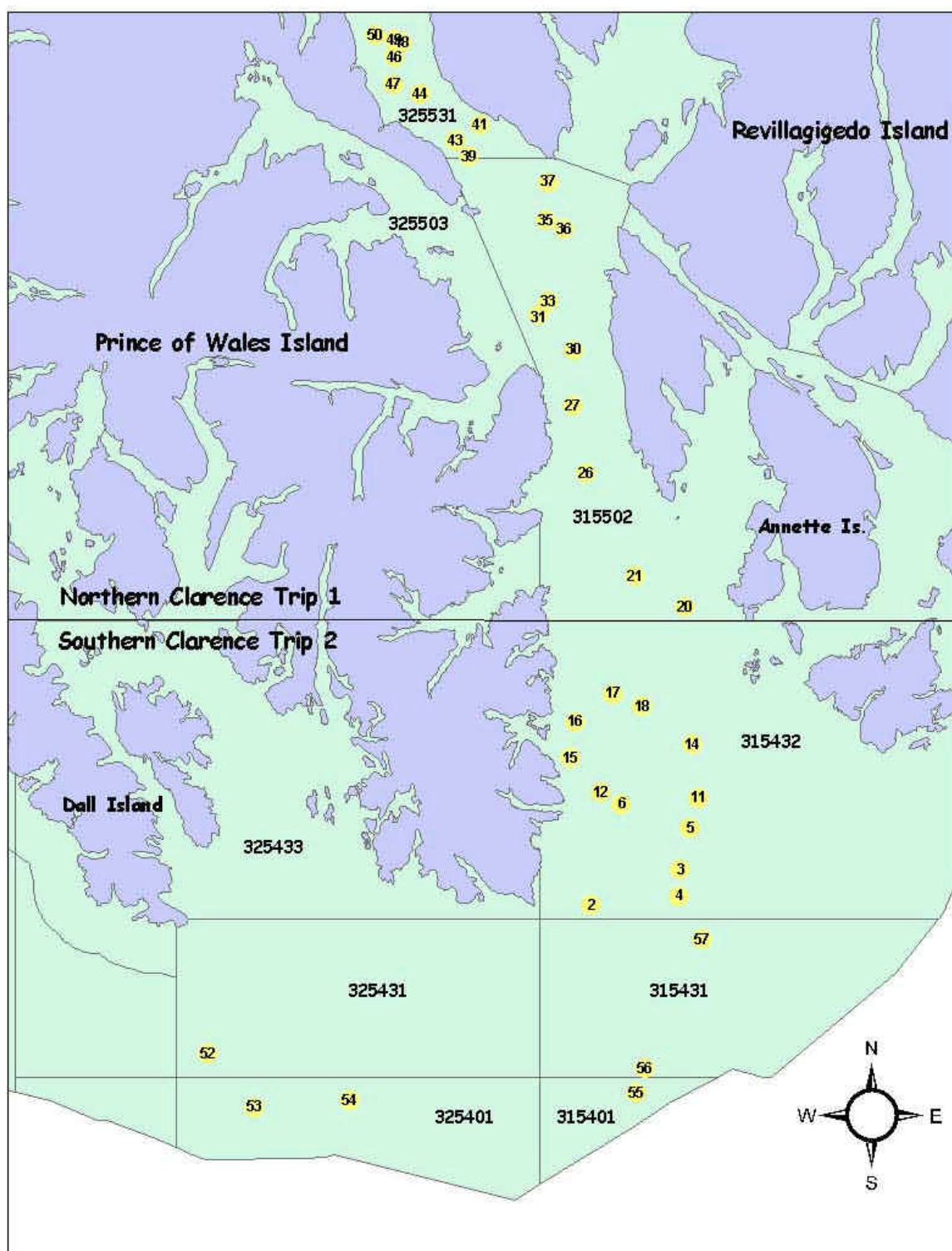


Figure 1. Survey station locations (circles numbered 2-57) and groundfish statistical areas (six digits).

The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfield Drive, Suite 300, Arlington, VA 22203; or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 907-465-3646, or (FAX) 907-465-2440.